**FIG. 1**

FIG. 2

# Rayleigh - Benard Convection Cells

(computer model)
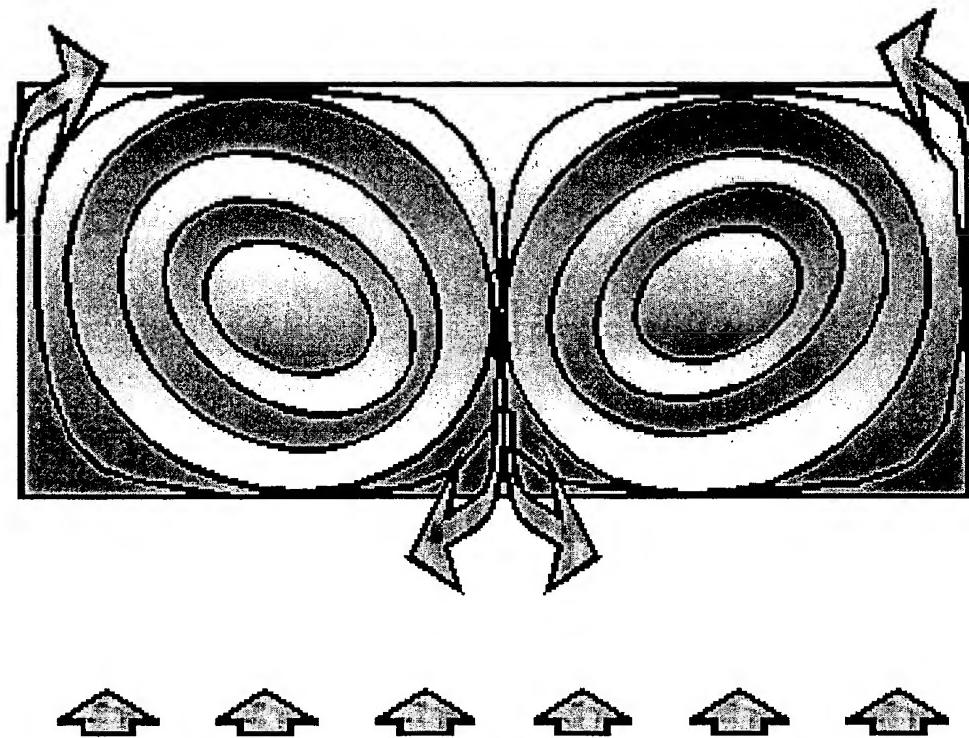
Plate Heated from below

Energy is transferred from bottom to top by the
Convection Cells formed in the Fluid when
Ra exceeds 1708. The direction of rotation of
two adjacent Cells are shown in the figure

FIG. 3

FIG. 4

FIG. 5

Pipette

Inlet Hole
(Radius, R_h)

Liquid
Drop

Hydrophobic
Patch

Microchannel

Glass

Silicon

(i)

P_{atm}

θ_t

Liquid Reservoir
(Volume V)

Water
Stopped

$P_{l,t}$

$P_{l,a}$

P_{atm}
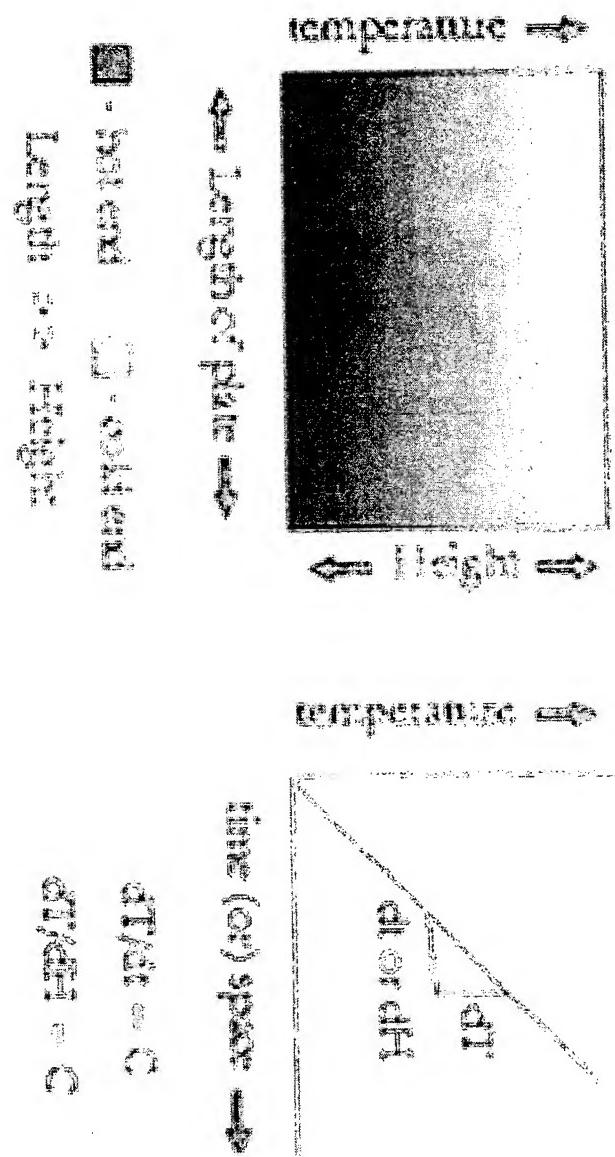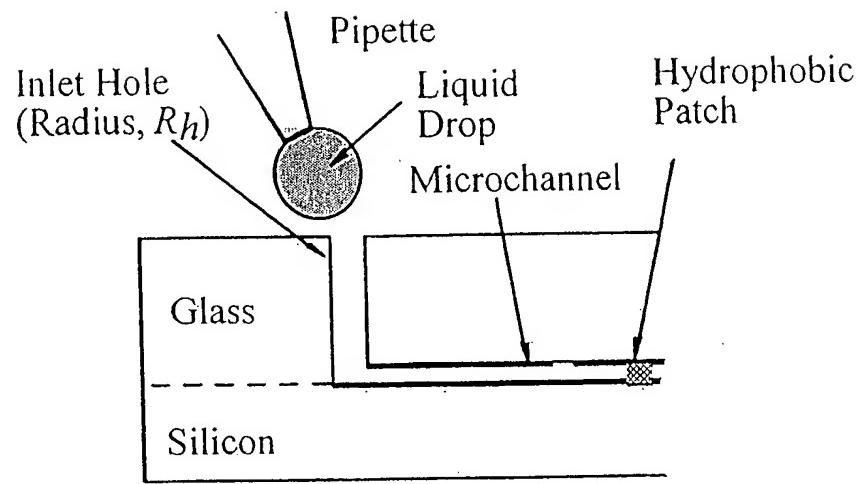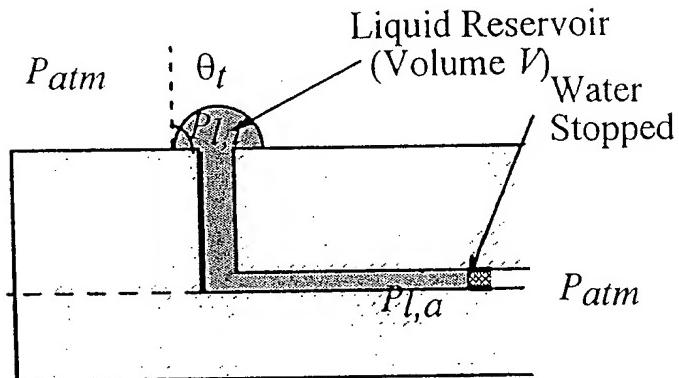
(ii)

FIG. 6A
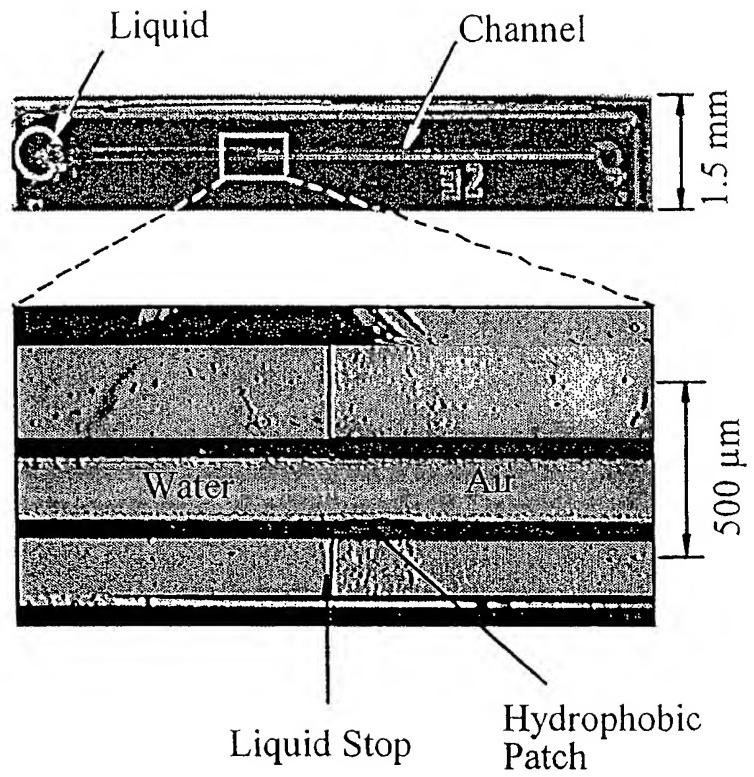
FIG. 6B
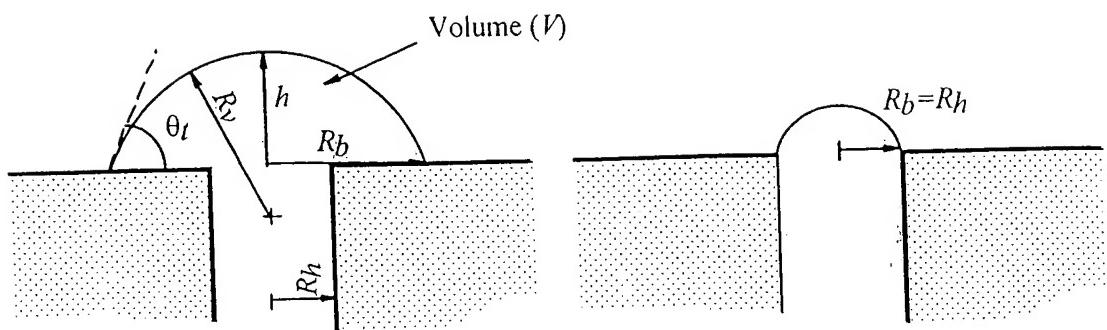
FIG. 7A

FIG. 7B
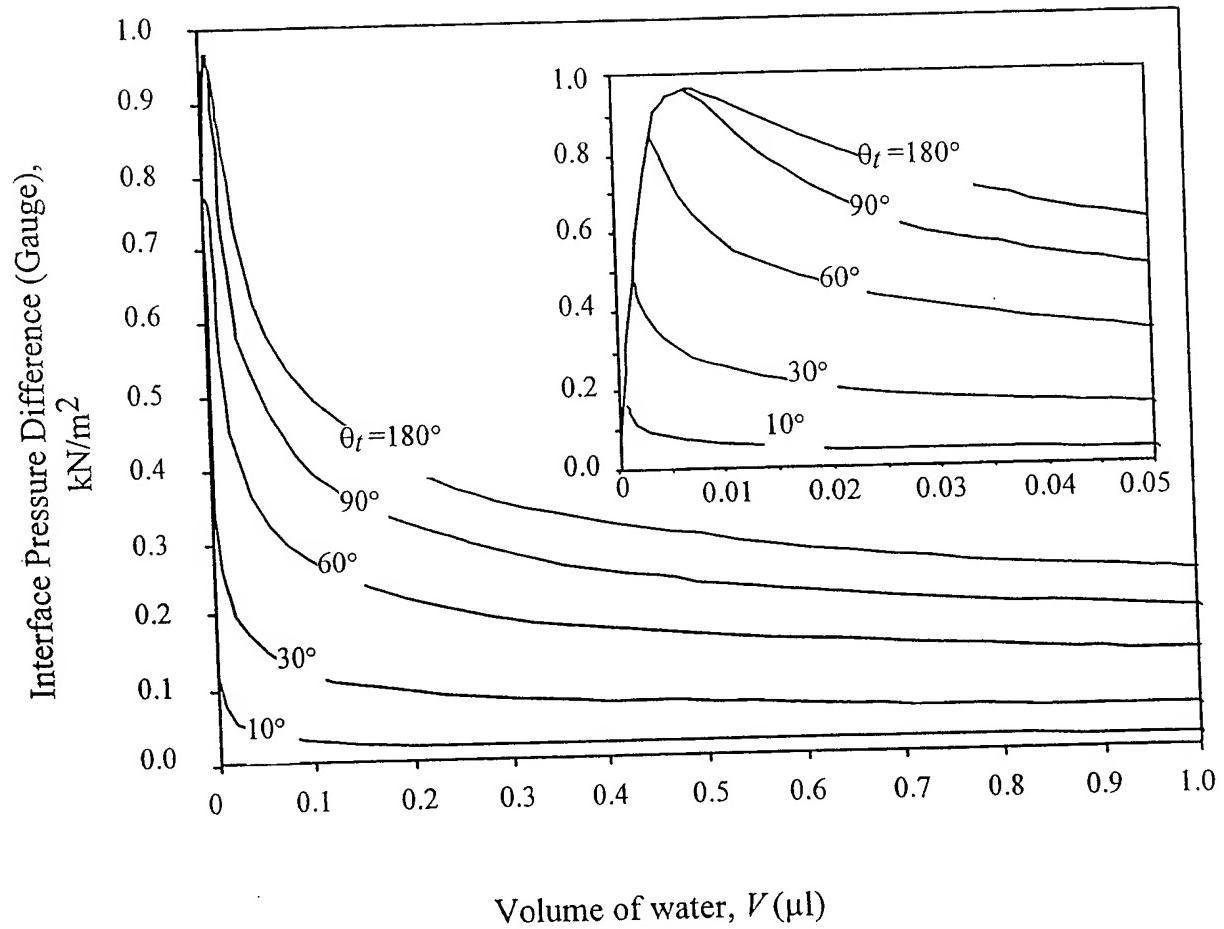
FIG. 7C
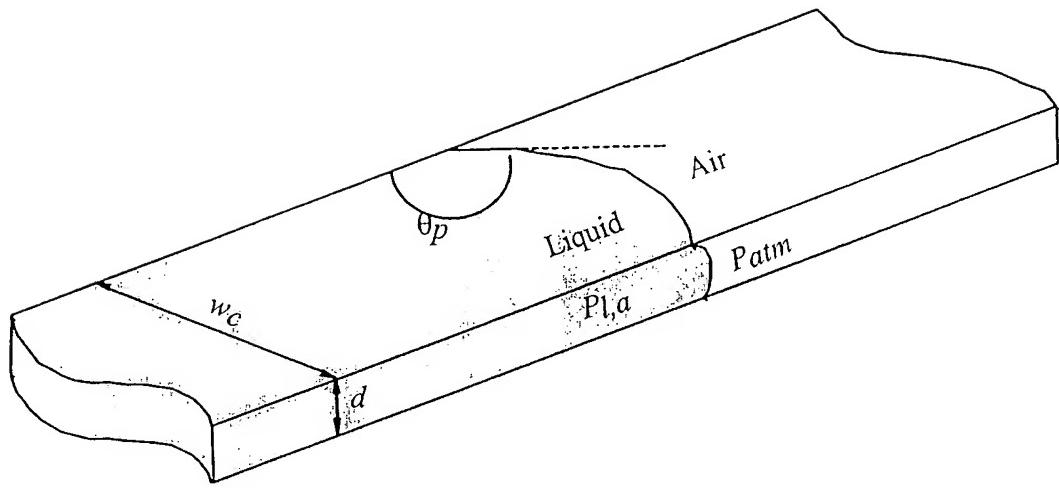
FIG. 8A
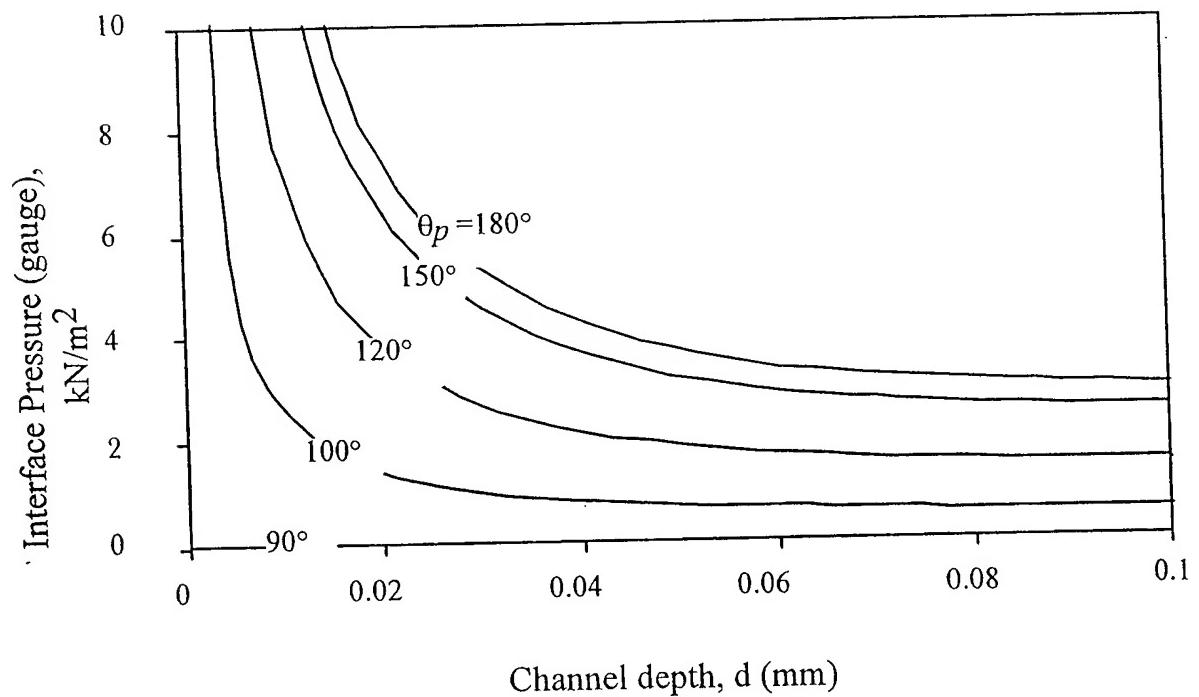
FIG. 8B
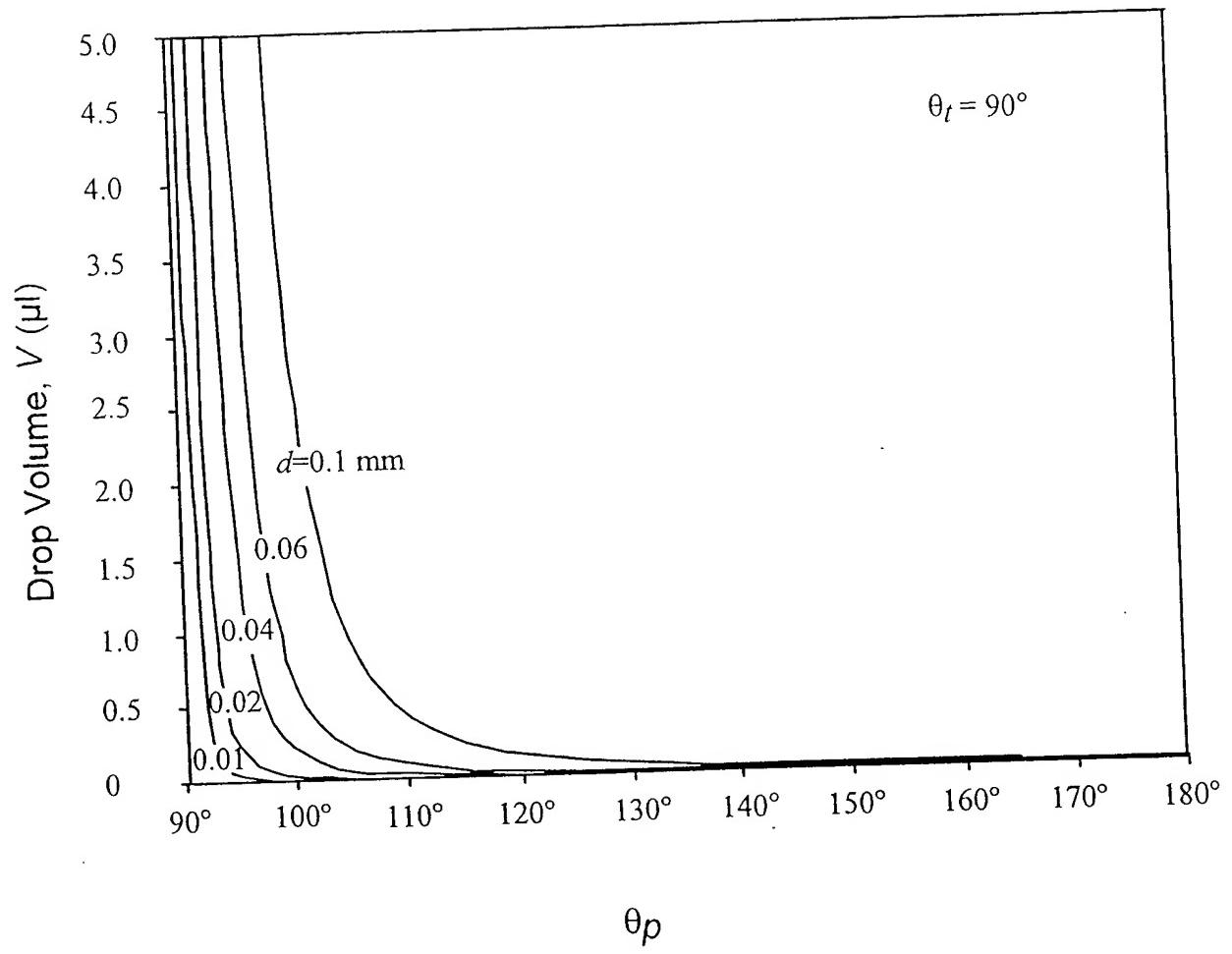
FIG. 9
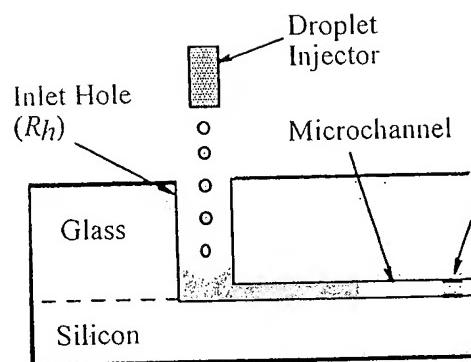
FIG. 10A
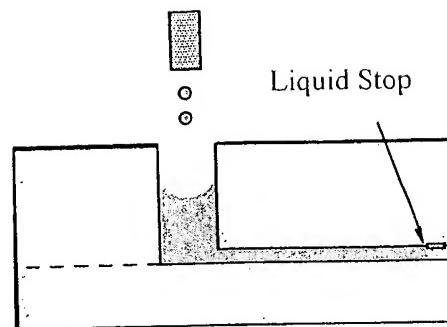
FIG. 10B
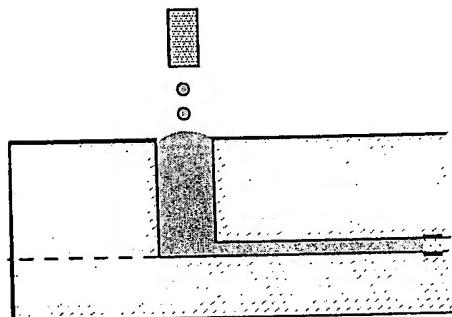
FIG. 10C

FIG. 10D

FIG. 11A

FIG. 11B

Inlet Hole   Main Channel

1.5 mm

Air Line   Splitter (Hydrophobic)

FIG. 12A

FIG. 12B

Air
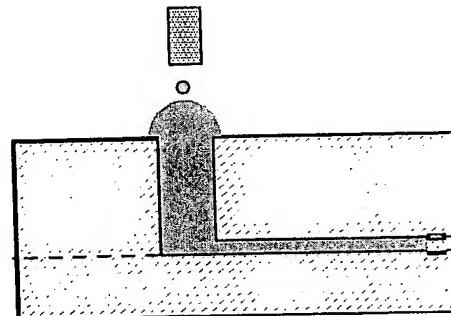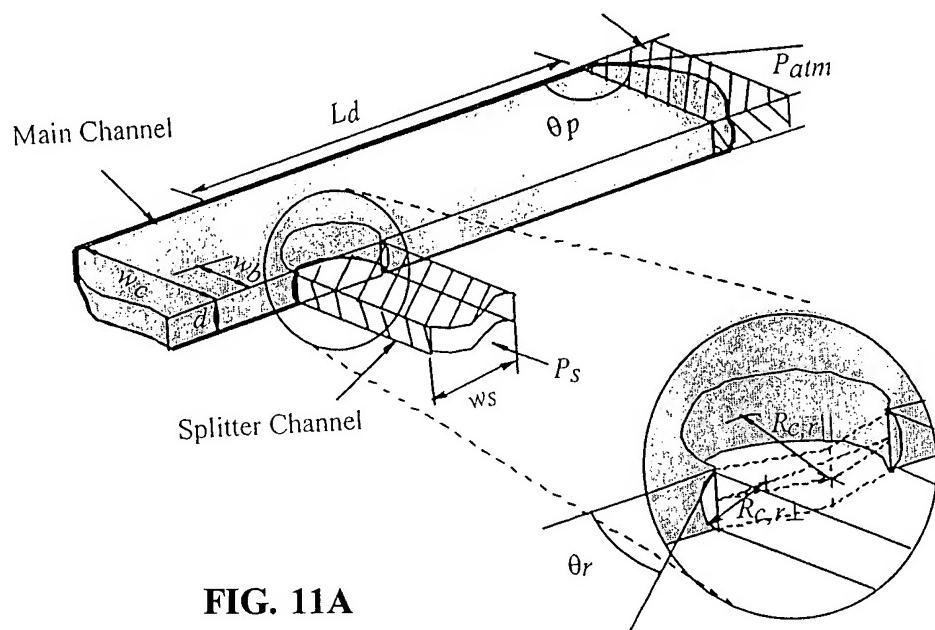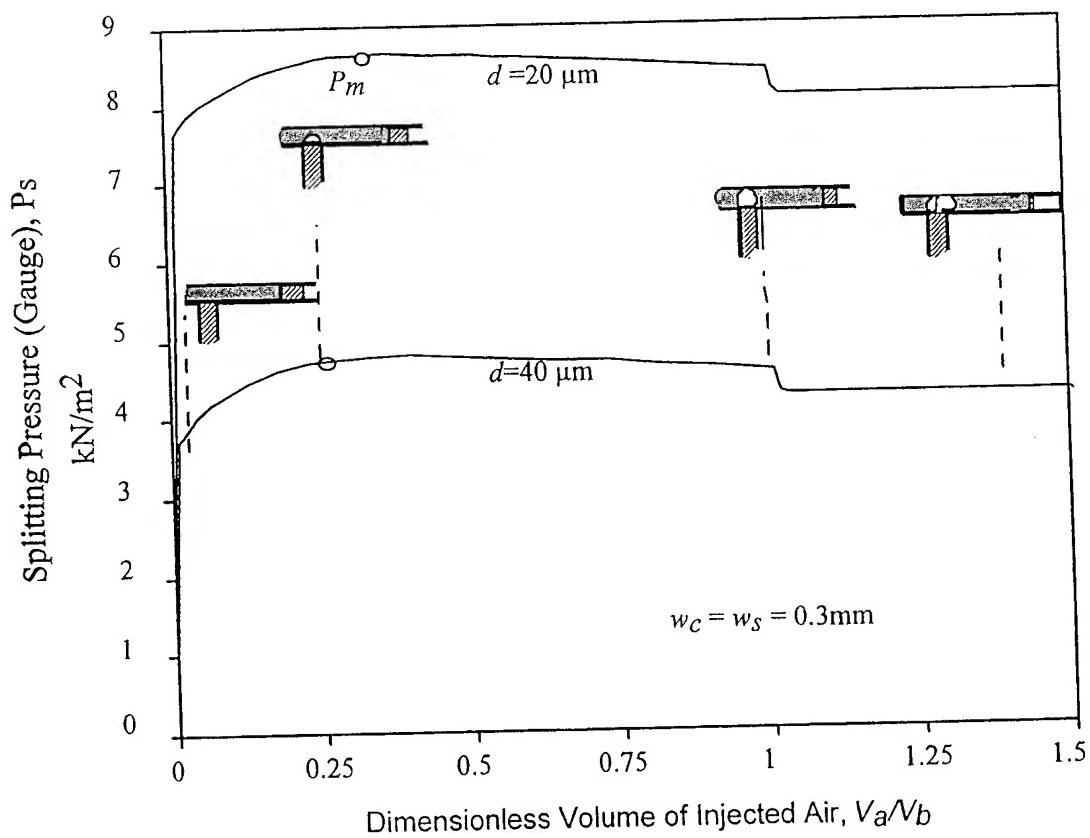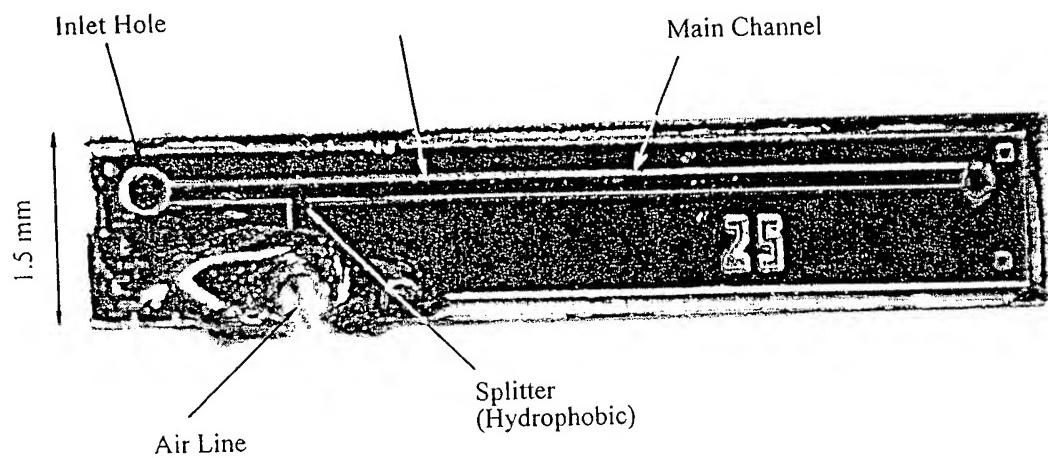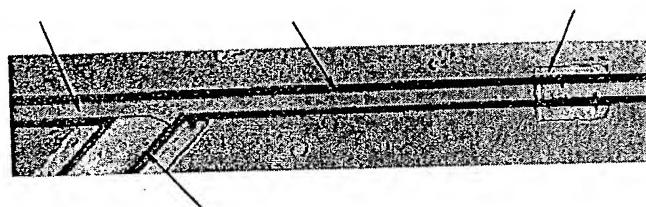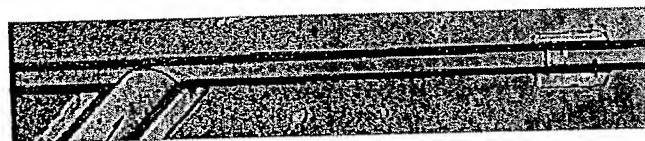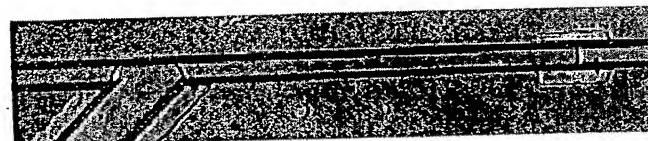
FIG. 12C

FIG. 12D

15 nl Discrete Drop
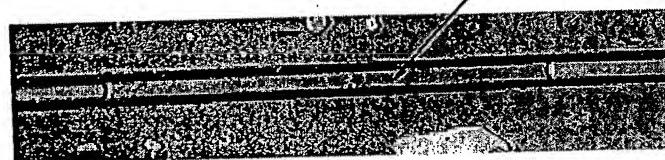

**FIG. 12E**
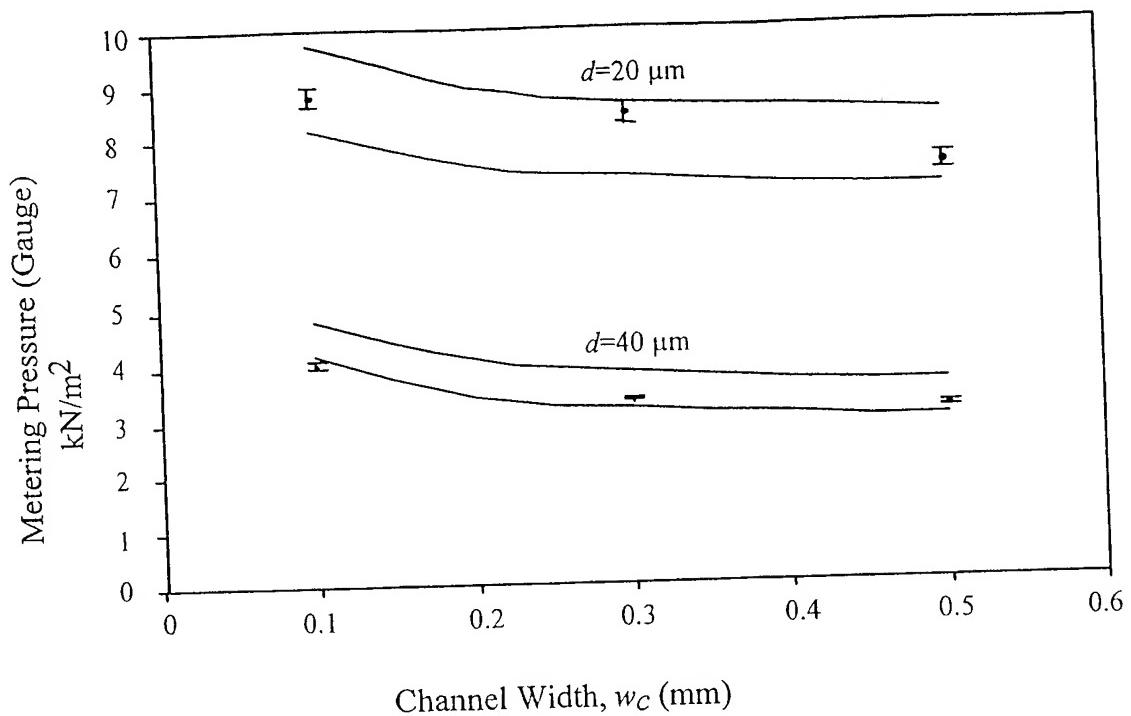
FIG. 13A

FIG. 13B

FIG. 14

SIO2   Al   SIOx   SIxNy
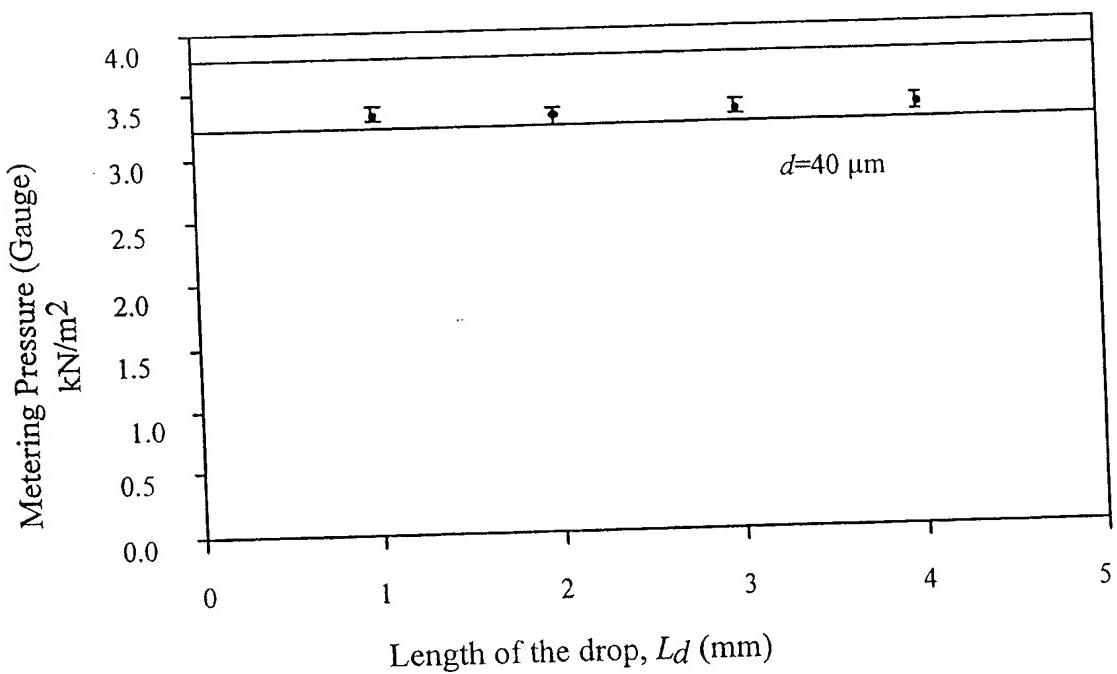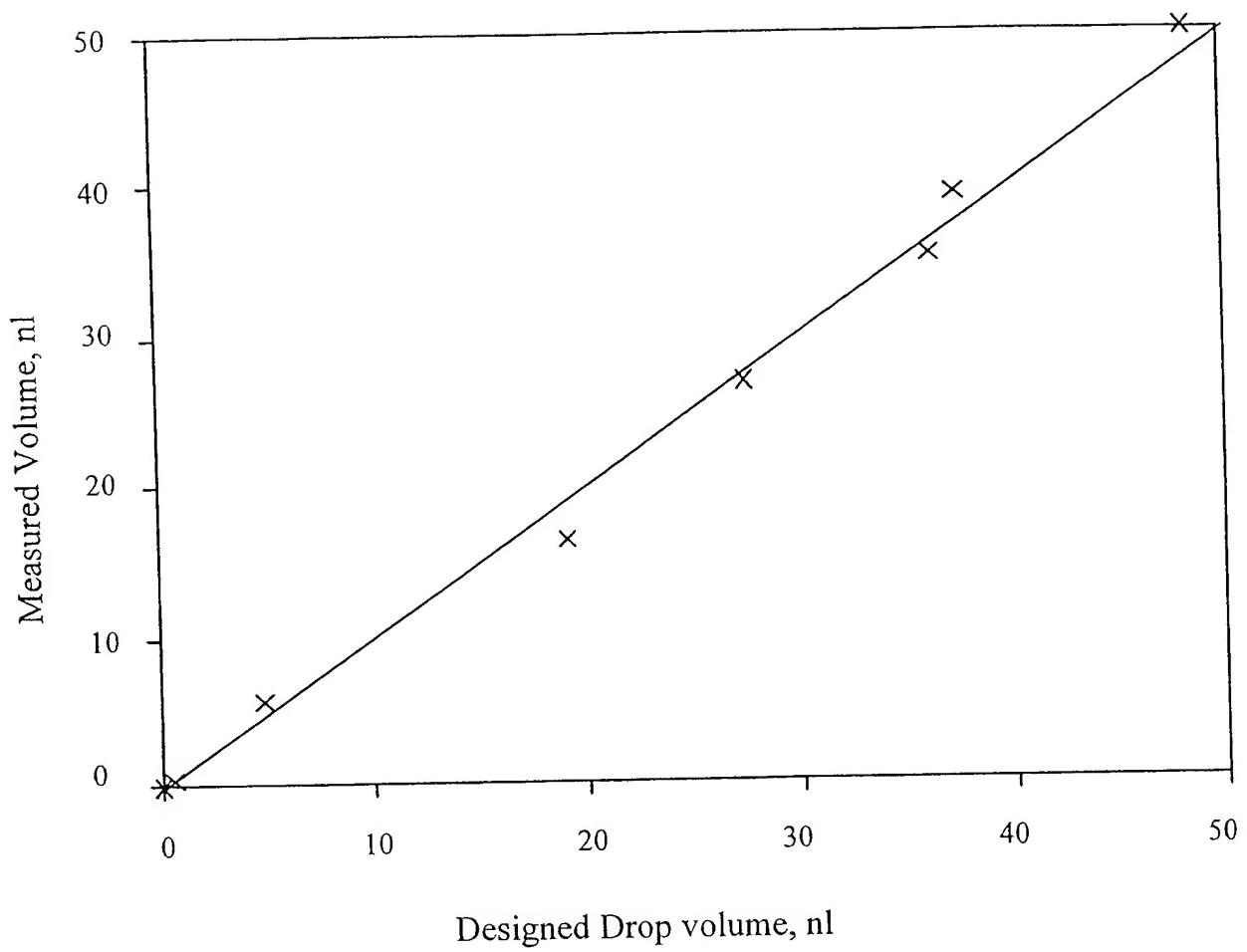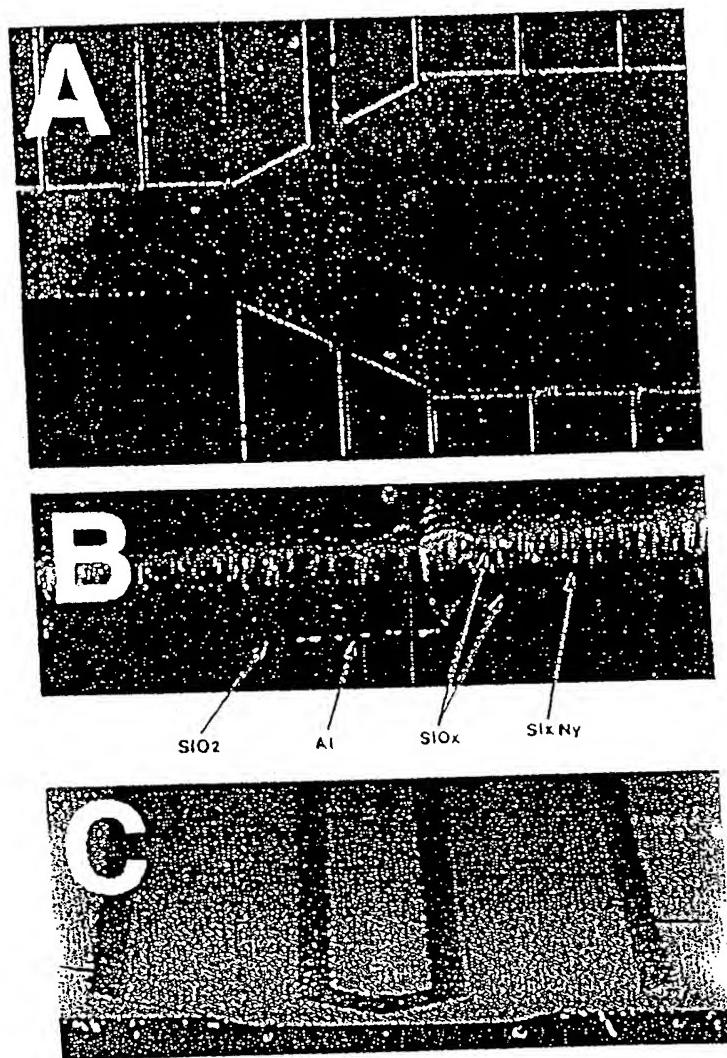
FIG. 15

FIG. 16A

FIG. 16B

FIG. 16C